Discrete Mathematics Seminar

Time: Friday, 4 November 2011, 12:30-1:30 PM
Room: 238 Derrick Hall
Title: Designing Optimal Spectral Filters for Inverse Problems
Speaker: Dr. Mattias Conrad-Chung, Mathematics Department

Abstract:

Filtering suppresses the amplification of errors when computing solutions to ill-posed inverse problems; however, selecting good regularization parameters is often expensive. In many applications, data are available from calibration experiments. Here, we describe how to use such data to pre-compute optimal filters. We formulate the problem in an empirical Bayes risk minimization framework. Numerical examples from image deconvolution illustrate that our proposed filters perform consistently better than well-established filtering methods.